

Att'y Dkt. No.: US-164

U.S. App. No: 10/784,980**REMARKS**

Favorable reconsideration, reexamination, and allowance of the present patent application are respectfully requested in view of the foregoing amendments and the following remarks. The foregoing amendments do not present new matter and are fully supported by the specification, specifically on page 12, lines 2-3.

***Rejection under 35 U.S.C. § 102***

In the Office Action, beginning at page 2, Claims 1, 4, 10 and 11 were rejected under 35 U.S.C. § 102(b), as reciting subject matters that allegedly are anticipated by Tsuchida et al. (JP60047692). Applicants respectfully request reconsideration of this rejection.

Tsuchida et al. allegedly disclose that xylose, glucose, sucrose, maltose, etc. can be used as a minor carbon source in L-threonine production in which lactose or galactose is used for the major carbon source. Tsuchida et al. do not disclose L-amino acid production using a mixture of glucose and pentose as the main carbon source. Additionally, the method of the present invention does not require lactose or galactose as an essential carbon source. Thus, the concepts of the method of Tsuchida et al. and the present invention are different, and all the elements of the claimed invention are not taught or suggested by Tsuchida et al..

For at least the foregoing reasons, Applicant respectfully submits that the subject matters of Claims 1, 4, 10 and 11 are not anticipated by Tsuchida et al., are therefore not unpatentable under 35 U.S.C. § 102, and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 102.

***Rejection under 35 U.S.C. § 103(a)***

In the Office Action, beginning at page 2, Claims 1-5 and 10-11 were rejected

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under 35 U.S.C. § 103(a), as reciting subject matters that allegedly are obvious, and therefore allegedly unpatentable, over the disclosure of Tsuchida et al. in view of Nichols et al. or Aristidou et al.

Nichols et al. and Aristidou et al. allegedly teach the use of *E. coli* strains engineered for enhanced pentose sugars utilization in ethanol production. The Examiner alleges that at the time the invention was made, it would have been obvious to a person skilled in the art to have used the cellulosic biomass as discussed in Nichols et al. and Aristidou et al. as the culture media for practicing the Tsuchida invention.

However, the culture media of the Tsuchida invention is different from that of the present invention as described above, since Tsuchida et al. teaches that xylose, glucose, sucrose, maltose, etc. can be used as a minor carbon source in L-threonine production in which lactose or galactose is used for the major carbon source. Tsuchida et al. do not disclose L-amino acid production using a mixture of glucose and pentose as the main carbon source.

Furthermore, there is no motivation to combine Nichols et al. and/or Aristidou et al. with the teachings of Tsuchida et al. Both Nichols et al. and Aristidou et al. are concerned with the production of ethanol via fermentation. The biosynthesis pathway of ethanol is very different from that of amino acids (the focus of Tsuchida et al.), in that the ethanol pathway branches off of the glycolytic pathway, while amino acids are produced from the TCA cycle. Therefore, the production of ethanol and amino acids are entirely different, and information about fermentation of ethanol will not apply or fairly suggest production of amino acids by fermentation. For these reasons, one of skill in the art would not be motivated to combine the teachings of either Nichols et al. and/or Aristidou et al. with those of Tsuchida to arrive at the claimed invention.

For at least the foregoing reasons, Applicants respectfully submit that the subject matters of Claims 1-5 and 10-11, each taken as a whole, would not have been obvious to one of ordinary skill in the art at the time of Applicant's invention, are therefore not

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unpatentable under 35 U.S.C. § 103(a), and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 103(a).

In the Office Action, beginning at page 5, Claims 1-5 and 10-11 were rejected under 35 U.S.C. § 103(a), as reciting subject matters that allegedly are obvious, and therefore allegedly unpatentable, over the disclosure of Nichols et al. in view of Hashiguchi et al. (US Pat. 5,998,178).

The Examiner alleges that Nichols et al. teaches the W3110 strain transformed with the *pet* (production of ethanol) plasmid, pLOI297, which resulted in increased utilization of xylose when grown in a media consisting of xylose and glucose. However, the strain that showed increased utilization of xylose is not W3110 (pLOI297) but the strain IT1168 (pLOI297). The increased utilization of xylose was due to *ptsG* mutation of IT1168. When the strain W1130 is used for ethanol production by introducing the *pet* plasmid, xylose utilization (Fig. 1b) is decreased as compared to the plasmid-less strain (Fig. 1a). This result would suggest that xylose or arabinose is inapplicable for fermentation using ordinary *ptsG*<sup>+</sup> strains.

Thus, Nichols et al. do not suggest the combination of glucose and pentose sugars for L-amino acid fermentation. As stated above, there are stark differences in the production of ethanol and amino acids, and one of ordinary skill in the art would not be able to make the leap from ethanol production by fermentation to that of amino acid fermentation, without utilizing undue experimentation. Hashiguchi et al. fails to cure this deficiency since the requirements for production by fermentation are not disclosed nor suggested.

For at least the foregoing reasons, Applicants respectfully submit that the subject matters of Claims 1-5 and 10-11, each taken as a whole, would not have been obvious to one of ordinary skill in the art at the time of Applicant's invention, are therefore not unpatentable under 35 U.S.C. § 103(a), and therefore respectfully requests withdrawal of

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the rejection thereof under 35 U.S.C. § 103(a).

In the Office Action, beginning at page 6, Claims 1-5 and 8-9 were rejected under 35 U.S.C. § 103(a), as reciting subject matters that allegedly are obvious, and therefore allegedly unpatentable, over the disclosure of over Deabov et al. (RU 2003677C) in view of Nichols et al.

The Examiner alleges that Deabov et al. discloses a strain of *E. coli* capable of producing a higher yield of L-histidine. However, Deabov et al. does not teach a culture medium with the proper components which allow superior production of amino acids. Nichols et al. fails to cure this deficiency since Nichols et al. concerns the production of ethanol, and the differences between ethanol production by fermentation and amino acid fermentation are too numerous and significant to overcome as explained *supra*, and certainly do not render obvious the instant claims either alone or when combined with Deabov et al.

Therefore, for same reasons described above, Applicants respectfully submit that the subject matters of Claims 1-5 and 8-9, each taken as a whole, would not have been obvious to one of ordinary skill in the art at the time of Applicant's invention, are therefore not unpatentable under 35 U.S.C. § 103(a), and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 103(a).

In the Office Action, beginning at page 8, Claims 1-5 and 10-11 were rejected under 35 U.S.C. § 103(a), as reciting subject matters that allegedly are obvious, and therefore allegedly unpatentable, over the disclosure of Nichols et al. in view of Liaw et al. (US 2002/0106800).

As explained above, the results from the teachings of Nichols would suggest that xylose or arabinose is inapplicable for fermentation using ordinary *ptsG*<sup>+</sup> strains. Liaw fails to make up for the deficiency of Nichols et al., as Liaw fails to teach or suggest the

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requirements for production of L-threonine by fermentation are not disclosed nor suggested.

Thus, neither Nichols et al. nor Liaw suggest the combination of glucose and pentose sugars for L-amino acid fermentation. As stated above, there are stark differences in the production of ethanol and amino acids, and one of ordinary skill in the art would not be able to make the leap from ethanol production by fermentation to that of amino acid fermentation, without utilizing undue experimentation.

For at least the foregoing reasons, Applicants respectfully submit that the subject matters of Claims 1-5 and 10-11, each taken as a whole, would not have been obvious to one of ordinary skill in the art at the time of Applicant's invention, are therefore not unpatentable under 35 U.S.C. § 103(a), and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 103(a).

In the Office Action, beginning at page 9, Claims 1-5 and 8-9 were rejected under 35 U.S.C. § 103(a), as reciting subject matters that allegedly are obvious, and therefore allegedly unpatentable, over the disclosure of and over Dunkak et al. (US Pat. 5,939,295) in view of Nichols et al. Applicants respectfully request reconsideration of this rejection.

Dunkak et al. do not disclose L-amino acid production using a mixture of glucose and pentose as the main carbon source. Thus, the concepts of the method of Dunkak et al. and the present invention are different, and all the elements of the claimed invention are not taught or suggested by Dunkak et al.. Nichols et al. fails to cure this deficiency since the requirements for production by fermentation are not disclosed nor suggested.

Furthermore, Nichols et al. do not suggest the combination of glucose and pentose sugars for L-amino acid fermentation. As stated above, there are stark differences in the production of ethanol and amino acids, and one of ordinary skill in the art would not be able to make the leap from ethanol production by fermentation to that of amino acid fermentation, without utilizing undue experimentation.

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Therefore, for same reasons as described above, Applicants respectfully submit that the subject matters of Claims 1-5 and 8-11, each taken as a whole, would not have been obvious to one of ordinary skill in the art at the time of Applicant's invention, are therefore not unpatentable under 35 U.S.C. § 103(a), and therefore respectfully requests withdrawal of the rejection thereof under 35 U.S.C. § 103(a).

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U.S. App. No: 10/784,980***Conclusion***

For at least the foregoing reasons, Applicant respectfully submits that the present patent application is in condition for allowance. An early indication of the allowability of the present patent application is therefore respectfully solicited.

If Examiner Fernandez believes that a telephone conference with the undersigned would expedite passage of the present patent application to issue, she is invited to call on the number below.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and the undersigned requests that payment be made from our deposit account 50-2821.

Respectfully submitted,

By: 

Shelly Guest Cermak  
Registration No. 39,571

U.S. P.T.O. Customer No. 38108  
Cermak & Kenealy, LLP  
515 E. Braddock Road, Suite B  
Alexandria, VA 22314  
703.778.6608

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